DOCUMENT DELIVERY SYSTEM FOR AUTOMATICALLY PRINTING A DOCUMENT ON A PRINTING DEVICE

RELATED INVENTIONS

5   The present invention is a continuation-in-part of U.S. Application No. 09/325,040 filed on June 7, 1999 entitled *Document Delivery System for Automatically Printing a Document on a Printing Device*, by Brewster, et al.

TECHNICAL FIELD

10   This invention generally relates to the printing field and, more particularly, to a document delivery system for automatically printing a document on a printing device.

BACKGROUND

15   In the mid-1400's, Johann Gutenberg revolutionized how information is disseminated through his invention of the movable type press. With the publication of the Mazarin Bible, documents which were once held in the exclusive domain of a chosen few were now widely available to the masses. Nearly 550 years later, the mass media revolution that Gutenberg started is

20   alive and well, complete with newspapers such as the New York Times and the Washington Post, magazines such as Newsweek and Sports Illustrated, and literally thousands upon thousands of other publications.

While these thousands of publications cover a wide range of interests, from news to sports to fashion to model rocketry, they have one thing in common: they are intended to be read by a mass market. Unlike the pre-Gutenberg days, where a document would literally be read by only one person

5   of a very small number of people, it is not economically viable for today's publications to have such a small readership, due at least in part to high marketing, production and distribution costs. In fact, many of today's publications are funded to a very large extent by the advertising contained within them. These advertisers are attracted to publications that can

10   consistently deliver a large, reliable audience of consumers that will be exposed to their advertising.

While this mass-market publication model has worked well for hundreds of years, it is not without its problems. One such problem is that a typical reader of a publication has a wide variety of interests, and no single

15   mass market publication will be able to satisfy all of these interests. For example, a reader who is interested in international news, golf, fly-fishing, Genealogy, and computers may have to subscribe to several different publications to satisfy these interests. Of course, since these publications are intended for the mass market, they will also contain a significant amount of

20   material that our reader is not interested in and will not read. It goes without saying that if there is a significant amount of material a read isn't reading, there is a significant amount of advertising that the reader isn't reading either – as well as a significant amount of paper that is wasted. Advertisers know this, and agree to pay considerably less to a mass market magazine or newspaper

per 1000 exposures to their ad than they would pay to a direct-mail generator that can provide a more specific guarantee that the people exposed to their ad are of a demographic group that will be much more likely to read their ad and be interested in it.

5   In addition, it is neither cost-effective nor time effective for most readers to subscribe to and/or read a large number of publications. Generally, the typical reader will only subscribe to a few publications that are of the most interest to them. The reduced readership level of the publications our typical reader chooses not to subscribe to, even though she might be interested in at

10   least some of the editorial and advertising content contained inside, means that the publication receives less subscription and advertising revenue than they otherwise would. If many other readers make the same decision, the continued health of the publication may be in jeopardy, and the publication may be forced out of business. In fact, many publications do go out of business yearly for

15   failing to attract a sustaining number of advertisers and readers – even if there are a large number of readers that would be interested in reading their publication, and a corresponding number of advertisers anxious to have these readers exposed to their ads. In general, publications that fail to attract a substantial mass market of people willing to pay for and/or read them cease

20   publication. This is a shame, since many of these publications would enrich the diversity of information available to all readers, and would provide an avenue for lesser known writers and artists to practice their wares.

In more recent years, a new type of publication has emerged: the electronic publication. Readers of these publications typically sign into the

Internet through their computer, and read the publications online. Some of these publications, such as CNN.com and pointcast.com, allow users to state personal preference on what type of material they would like to read. Often, these personalized publications include advertising, usually in the form of a

5   banner ad that is placed on along a periphery of the visual display (top, bottom, side, etc.).

While these electronic publications have been an interesting development in the distribution of information, they still represent only a tiny fraction of the information that is published under the more traditional post-

10   Gutenberg model. Many readers of these electronic publications complain that they are very difficult to read (on the video display), especially for long periods of time. While it might be convenient for a reader to sign onto the Internet to look at the CNN.com web site for a brief summary of late breaking news, this reader would most likely only spend a few minutes at the site, and would likely

15   still subscribe to the more traditional print media such as Newsweek or the Washington Post. They would also likely spend significantly more time reading the more traditional printed publication than they would spend reading the electronic publication, and correspondingly, spend more time being exposed to the ads in the traditional printed publication. Accordingly, printed

20   publications continue to flourish today – more than five centuries after Gutenberg made them possible – and after more than a decade after the innovation of the electronic publication.

While these printed publications have certainly benefited modern society, no significant attempt has been made thus far to solve the underlying

problems with these publications discussed above. Just such a solution is provided herein.

SUMMARY

5   In accordance with the teachings of the present invention, a document delivery system for automatically printing a document on a printing device is presented. More specifically, in accordance with a first aspect of the invention, a method for printing one or more documents operatively coupled to a printing device is presented, the method comprising issuing a request to retrieve one or

10   more documents from an associated one or more providers in response to an indication received from a user. Receiving the requested one or more documents in a print manager operatively coupled to the printing device, and printing the retrieved one or more documents from the print manager, without invoking an application associated with the one or more documents, or

15   otherwise displaying the one or more documents to the user.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows a block diagram of a document delivery system of one embodiment of the invention;

20   **Figs. 2-4** illustrate flow charts detailing the operation of the transmission module and the printing module of the document delivery system of one embodiment of the invention;

Fig. 5 illustrates how user profile information is acquired from a user in one embodiment of the invention;

Fig. 6 shows how user profile information is acquired from a user in one embodiment of the invention;

Fig. 7 shows a print schedule for the delivery of documents in one embodiment of the invention;

5   **Fig. 8** shows how the print schedule of Fig. 7 can be modified by the user;

Figs. 9A-9B shows a document printed by the printing device according to one embodiment of the invention;

Fig. 10 shows a document printed by the printing device according to 10   one embodiment of the invention;

Figs. 11A-11D show a document printed by the printing device according to one embodiment of the invention;

Fig. 12 shows a document printed by the printing device according to one embodiment of the invention;

15   **Fig. 13** illustrates a block diagram of an example print manager, according to one embodiment of the present invention;

Fig. 14 illustrates a flow chart of an example method of print manager operation, according to one embodiment of the invention; and

Fig. 15 graphically illustrates an example web page including an icon 20   which, when selected by a user, causes an associated document to be printed by the printing device, without displaying the document.

DETAILED DESCRIPTION

Fig. 1 illustrates a block diagram of a document delivery system of one embodiment of the invention. Document delivery system 10 contains document server 100. In the preferred embodiment, document server 100 is

5   operatively coupled via network 200 to a variety of personal computers, printing devices, and other electronic devices, collectively referred to devices 300. Document server 100 contains edit module 120, transmission module 150 and knowledge module 170. Edit module 120 receives inputs from one or more content providers 50, and/or one or more advertising providers 80.

10   Distribution module 400 is operatively coupled to document server 100. In a preferred embodiment, document server 100 is a minicomputer/server, such as an HP 9000 server sold by the Hewlett-Packard Company, although those skilled in the art will appreciate that document server 100 could be any type of other computing or electronic device(s) that performs the functions described

15   herein and still fall within the spirit and scope of the invention. Network 200 is preferably the Internet, although an Intranet, local area network, or other type of public or private network, either wired (e.g., telephone, cable TV, etc.) or wireless (e.g., satellite, radio, cell phone, etc.), could also or additionally be used.

20   Devices 300 are shown in Fig. 1 as being capable of being configured in a wide variety of ways. For example, personal computer 310 is shown connected to printing device 320, which prints document 10320 for user 20320. Personal computer 310 is operatively coupled to network 200. In contrast, printing device 330, which prints document 10330 for user 20330, is

operatively coupled to network 200 without an intervening personal computer or other electronic device. Printing device 350, which prints document 10350 for user 20350, is shown connected to electronic device 340, which could be a set top box, television set, palmtop personal digital assistant (PDA) or other

5 type of electronic device that is operatively coupled to network 200. Finally, printing device 370, which prints document 10370 for user 20370, is connected to electronic device 360, which is operatively connected to network 200. The printing devices shown in Fig. 1 could be printers, such as the HP DeskJet 890 printer, HP LaserJet V printer, or other models of printers manufactured by HP

10 or others; so-called "mopiers" or other multi-function printing devices that can print, fax, scan, and/or copy, or any other device capable of transferring information to a printable media such as plain paper, specialty paper, transparencies, or other media capable of tangibly receiving such information and which can be easily carried about by the user.

15 According to one aspect of the present invention, document delivery system 100 includes an innovative printing module 380 and a transmission module 150. Transmission module is preferably located with document server 100. As Fig. 1 shows, printing module 380 could be located in any of the devices 300, such as in personal computer 310, printing device 330, or

20 electronic device 340, operatively coupled via network 200 to document server 100, or it could be located within document server 100 itself, such as in knowledge module 170. According to one embodiment of the invention, transmission module 150 and printing module 380 represent software functions that execute on suitably programmed microprocessor(s) within a device 300

and/or document server 100. It will be appreciated, however, that special purpose hardware or other mechanisms could be employed to implement the innovative features and functions described below.

5   Turning briefly to Fig. 13, a block diagram of an example printing module 380 is presented, according to one embodiment of the invention. According to one embodiment, to be described more fully below, printing module 380 resides within one or more of devices 300 and, in response to user interaction with a user interface (not shown), schedules and manages the delivery of one or more documents to a printing device. Any of a number of

10   user interfaces may be used to utilize the features and functions of printing module 380. According to a preferred embodiment, to be described more fully below, a web page is projected to a device 300 by document server 100, content provider 50 and/or advertisers 80, wherein the web page includes one or more iconic function calls to one or more of the features/functions provided

15   by printing module 380.

As shown in Fig. 13, printing module 380 includes one or more controller(s) 402, a print function 404, a scheduler function 406, a document translation/interpretation function 408, a memory/storage system 410, an input/output (I/O) interface 412, and optionally one or more applications 413,

20   each coupled as shown. It will be appreciated that, although denoted as separate functional blocks, one or more elements 402-413 may well be combined without deviating from the spirit and scope of the present invention. Moreover, although depicted in accordance with a hardware paradigm, those skilled in the art will appreciate that printing module 380 and its associated

elements 402-413 may well be embodied as a series of executable instructions which, when executed by a host processor of devices 300, implement the features and functions of printing module 380 to be discussed below. In this regard, Fig. 13 is merely illustrative of the scope and spirit of the claimed

5   invention.

As shown, controller(s) 402 selectively invoke one or more functions 404-408 and/or applications 413 in response to user interaction with a user interface, e.g., a web page. According to one embodiment, the user interface includes iconic selectors, e.g., buttons, which when selected by the user causes

10   controller 402 to selectively invoke an instance of a function associated with the selector. In this regard, controller 402 communicates with external elements via input/output (I/O) interface(s) 412. In an alternate embodiment, controller 402 provides a user with a user interface from applications 413.

As used herein, I/O interface(s) 412 are intended to include one or more

15   of any of a number of communication interfaces known in the art including, but not limited to, a direct connect communication interface (e.g., a serial interface, a parallel interface, a Universal Serial Bus (USB), an Advanced Graphic Port (AGP), etc.), a local area network interface (e.g., an Ethernet interface, a Token Ring interface, etc.), or a wide area network interface. In

20   this regard, printing module 380 may communicate with any of a number of external and remote devices using an appropriate one of a plurality of wired and/or wireless I/O interfaces 413.

Automated print function 404 is selectively invoked by controller 402 in response to a user indication to immediately print a document (e.g., within the

next several seconds) without first viewing or displaying the document. According to one embodiment, a user interface projected by printing module 380 or from an external source (e.g., document server 100) includes an iconic selector associated with one or more documents to invoke the automated print

5   function 404 to print the one or more documents. Insofar as selection of the iconic selector associated with the one or more documents automatically causes the documents to be queued for printing (e.g., within the subsequent several seconds), the iconic selector is referred to herein as an "automated print" icon, or an "instant print" icon.

10   When the automated print icon associated with one or more documents is selected by a user, the user interface provides controller 402 with information regarding the associated one or more documents. According to one implementation, user interface provides controller 402 with a name/identifier and storage location of the one or more documents. Controller

15   402 provides the name/identifier and location information to automated print function 404 to queue the document for printing. As will be described in more detail below, automated print function generates and issues a request to retrieve the identified document(s) from the identified storage location via I/O interface 412. The retrieved documents are stored in memory locations 414A, 414B,

20   etc. of memory 410. Once retrieved, document translation/interpretation function 408 is selectively invoked to interpret/translate and print the retrieved document. According to one implementation, the retrieved documents are queued and printed substantially instantaneously (e.g., within the subsequent

several seconds). In alternate embodiments, the retrieved document(s) are printed according to a print schedule defined by the user.

According to one aspect of the invention, to be described more fully below, the document associated with an iconic selector is retrieved from a provider into memory 410 of print module 380 and immediately printed without invoking an application associated with the document. That is, translation/interpretation function 408 reads the stored document(s), interprets the textual, image, formatting, etc. content of the document(s) to print the document on an operatively coupled printer without having to invoke the application associated with the retrieved document(s), and without having to display the document(s) to the user prior to printing.

In an alternate embodiment, an application 413 (e.g., Microsoft Word, Adobe Acrobat, etc.) associated with the document is invoked by controller 402 to print the document, but neither the document nor the application 413 are displayed to the user so, from the user's perspective, the application is not launched. In either case, automated print function 404 enables a user to immediately print a remote document without having to manually download, launch and print the document, thereby providing the user with the convenience and selection of electronic publications, with the physical reading experience introduced by the Gutenberg press.

The scheduling function 406 enables a user to establish a print schedule 390 for documents of interest. According to one embodiment of the present invention, scheduling function 406 is selectively invoked by controller 402 in response to a user's indication to add the document to a print schedule 390. As

shown in Fig. 1, the printing schedule 390 may be located in devices 300, document server 100 or any other accessible location.

Turning to Figs. 2-4, flowcharts detailing the operation of transmission module 150 and a first mode of operation of printing module 380 are

5 presented, according to one embodiment of the invention. In Figs. 2-4, the flow diagram shown in the left column is executed by transmission module 150 of document server 100, and the flow diagram in the right column is executed by printing module 380.

Referring now to Fig. 2, the flow diagram for transmission module 150

10 starts in block 1000, and the flow diagram for printing module 380 starts in block 2000. Since there is a great deal of interaction between these two flow diagrams, as represented by dashed lines connecting the two columns, the operation of the two flow diagrams will be described simultaneously.

In block 2100, user profile data is sent to document server 100 to be

15 stored in the user profile. This user profile data can take on many different forms, from simple to very detailed. Fig. 5 shows a very simply acquisition of user profile data, such as that used in HP's Instant Delivery Program, the first version of which was generally available to the public less than one year from the filing date of this patent application. In this program, only three pieces of

20 information are stored in the user profile: type of printer, email address, and whether HP can contact the user. Fig. 6 shows a more complicated user profile than that currently used in HP's Instant Delivery Program, which includes the user's name, email address, company name, city, state, country, zip or postal code, phone number, printer information, and areas of interest. Those skilled

in the art will appreciate that more or less user profile data from those shown in Figs. 5 and 6 could be sent to transmission module 150 in block 2100 and still fall within the spirit and scope of the invention, and that at least some of this information could come from a source other than a user. For example, the user

5   profile data could also include household income, age, and sex of the user, among other things. In any event, block 1100 receives the user profile data sent by block 2100. Block 1200 stores the user profile data, preferably in knowledge module 170. Alternately, the user profile data could be stored in device 300 or in some other local or remote location.

10   Block 2200 checks to see whether a document should be received form document server 100. This is done by checking print schedule 390 which is preferably stored on a device 300 or document server 100, but may be stored in some other local or remote location. Printing schedule 930 preferably contains information that can be used to determine when documents should be printed

15   by the printing device, such as upon document creation, user requested time, lapse of specified time period, and/or occurrence of one or more external events (e.g., a stock price or index reaching a specified value, a final score of a sporting event, etc.). Printing schedule 390 may be associated with an individual user, a device or a group or users and/or devices. In addition, each

20   entry of printing schedule 390 could result in the printing of one or more documents.

Fig. 7 shows one example of printing schedule 390, of the type that might be used in an enhanced version of HP's Instant Delivery program. In this example, the title of delivery, delivery schedule, next delivery data and

time, and the last deliver status are shown. Preferably, the user can select what time a document should be printed, whether it should be printed on a specific day of the week or month, weekdays, or weekends, and whether the printing schedule should expire after a specific period of time or continue indefinitely.

5   Referring again to Fig. 2, printing module 380 monitors printing schedule 390 to see if a document should be requested from document server 100 or from another source. When block 2200 determines that a document should be requested from document server 100 or from another source, block 2200 is answered affirmatively, and block 2300 automatically requests the

10   document without user intervention from server 100 or from another source, as will be described in greater detail below. Note that if printing module 380 is located on device 300, block 2200 operates in a "pull" mode – where the document is "pulled" from document server 100 or another source to device 300. However, if printing module 380 is located remotely from device 300,

15   such as in document server 100, block 2200 operates in a "push" mode – where the document is "pushed" from document server 100 or another source to device 300. If block 2300 determines that the document is located on document server 100 or at another source accessible via network 200, and if device 300 is currently in a disconnected state where it is not operatively

20   coupled to the network 200, block 2300 will sign on to or otherwise enter a connected state with network 200, so that device 300 is operatively coupled to network 200.

Meanwhile, block 1300 checks to see if a document has been requested from printing module 380 in block 2300. Once it determines that such a

document has been requested, block 1400 generates the document for printing module 380. Block 1500 then sends the document to printing module 380. Block 2400 checks to see whether a document has been received from document server 100 via block 1500. Once such a document has been

5   received, block 2500 automatically prints the document, without user intervention, on a printing device. The term "without user intervention" means that a user is not directly involved in the printing operation; the document is sent automatically to a device 300 to be printed out by a printing device. According to this mode of operation, the user does not press "any" print

10 buttons or otherwise be directly involved in the printing process; in fact, the user may not even be present in the same room, city, state, or country as device 300 during the printing operation. The printing operation automatically occurs in an unattended state – regardless of whether the user is present or not. In addition, if print schedule 390 is stored in a device-independent manner, such

15 as on document server 100, a travelling user could "log in" to document server 100 and have his or her customized document sent to a device 300 that is convenient to the user's current location.

Referring now to Fig. 3, block 2600 checks to see whether the document printed successfully. If not, block 2800 performs error handling, such as

20 attempting to print the document again, notifying the user that the printing device is out of paper or has some other error condition, or simply deciding not to print the document. When the document prints successfully, block 2900 informs document server 100 that the document printed successfully. Block 1600 waits for an indication from printing module 380 that the document did

print successfully. When such an indication is received, block 1700 updates the user profile with this information.

It will be appreciated that not all of the blocks in Figs. 2-4 need be implemented, or implemented according to the order denoted, to fall within the spirit and scope of the present invention. More specifically, according to one implementation, flow of control moves from block 2600 to block 4100 of Fig. 4, as will be discussed later, and from block 1500 back to block 1300 of Fig. 2.

An alternate embodiment has been contemplated where other information is transmitted back to document server 100 in block 2900 to update the user profile preferably stored in knowledge module 170. This other information could be ink usage (total usage or usage broken out by ink color), printable media usage (number of pages printed, type of media used, etc.), or other types of information. In addition, another alternate embodiment has been contemplated where some or all of the information contained in the user profile stored in knowledge module 170 came from a source other than the user via printing module 380. For example, publicly or privately available information about the user, and/or the devices 300 he/she/they use, could be acquired from a wide variety of different sources and inserted into the user profile preferably stored in knowledge module 170.

Block 1800 examines the user profile preferably stored in knowledge module 170 to determine whether a product subsidy should be provide to the user. For example, if the information in the user profile indicates that this user has printed off his 1000th document, such as a "preferred" document that contains advertising from advertising providers 80 or is otherwise under the

control of edit module 120, providing a product subsidy to the user may be warranted. For purposes of this invention, a "product subsidy" could be a print consumable or other product. A "print consumable" is an inkjet cartridge for an inkjet printer, ink for such an inkjet cartridge, a toner cartridge for a laser

5   printer, toner for such a toner cartridge, or any other product or substance that is depleted when a document gets printed, including printer ribbons, etc. Note that the "ink" referred to above would typically be of a permanent variety, but erasable ink, such as that sold by the Eink Company, could also be used.

Note that the product subsidy referred to herein is preferably funded at

10   least in part by advertising revenue received from advertising providers 80 (Fig. 1), but an embodiment has been contemplated where the product subsidy is funded at least in part from the distribution revenue received from content providers 50 (Fig. 1). In either case, information (such as statistical information) about what was printed by whom is preferably provided to

15   content providers 50 and/or advertising providers 80 – preferably as a document that is automatically sent to one or more printing devices according to the teachings of this invention.

Other forms of products that are contemplated to be subsidized by this invention include printable media, such as plain paper, specialty paper,

20   transparencies, and the like, and may also include devices 300 such as printing devices, electronic devices, and personal computers. In fact, alternate embodiments have been contemplated where other products, such as a subscription price to a document, or even a product not directly related to the document delivery system shown herein, such as soap or dog food, are

subsidized. If block 1800 determines that such a subsidy is warranted, block 1900 requests that distribution module 400 provides such a subsidy to the user. In one embodiment, distribution module 400 simply mails a product such as a print consumable or other product such as the type described above to a user at

5 the address specified in the user profile. In another embodiment, distribution module 400 mails or electronically generates a coupon that the user can use to receive a free or discounted product of the type described above. Regardless of whether block 1800 is answered affirmatively or negatively, flow of control then returns back to block 1300 (Fig. 2) to see if another document has been

10 requested from the printing module 380.

Referring again to Fig. 3, after block 2900 informs document server 100 that the document printed successfully, flow of control moves to block 4100 (Fig. 4), which checks with document server 100 to see what the current version of printing module 380 is. Block 3100 checks to see whether such a

15 request has been received, and when it is, block 3200 sends information concerning the current version of the printing module to printing module 380. Block 4200 compares this information from document server 100 with its own version and determines whether an updated version of printing module is available. For example, if printing module 380 is running version 4.0, and

20 document server 100 indicates that version 4.1 is the current version of printing module 380, block 4200 would determine that an updated version of printing module 380 is available, and flow control would move to block 4300. Block 4300 checks to see whether this updated version of printing module 380 should be requested to be downloaded. While a user would typically be asked

whether such a download should be requested or not, and would typically perform this download at a convenient time, such a step could also be performed automatically without user intervention. If such a download is requested, block 4400 is answered affirmatively, and block 3500 downloads

5   the updated printing module, which is then installed in block 4500. Regardless of how blocks 4200 and 4300 are answered, flow of control moves to block 4600, which checks to see if a disconnected state should be entered. If block 2300 (Fig. 2) determined that device 300 was in a disconnected state when the document was requested, as discussed above (i.e., not operatively coupled to

10 network 200), block 4600 is answered affirmatively, and block 4700 reenters the disconnected state. In any event, flow of control returns to block 2200 of Fig. 2.

Referring again to print schedule 390 shown in Fig. 7, it can be seen that many different types of documents can be requested to be printed. For

15 example, the title of document 11000 specifies a network address, such as an Internet uniform resource locator (URL) that contains the network location of a document to be printed. Note that this URL may be partially or completely hidden from the user, as is the case with the URL for document 15000 (http://www.beloitdailynews.com). In this scenario, edit module 120 of

20 document server 100 merely goes out to the Internet at the URL indicated (which would be shown in Fig. 1 as one of the content providers 50), and captures the indicated document, which is then transmitted to a printing device via transmission module 150 and printing module 380, as has been discussed. Alternatively, device 300 could go directly out to the URL itself without

assistance from document server 100; in this case, block 2300 (Fig. 2) requests document 11000 from another source – directly from the content provider 50 (at the indicated URL) via network 200.

5   In contrast, document 12000 is not a document that originates with a content provider 50 via the Internet, but instead is stored directly on device 300, such as a printing device, personal computer, or other electronic device. An example of such a document could be a daily calendar from a program such as Microsoft Outlook, which the user has requested be printed automatically to his printer, without any user intervention, at 7:00 a.m. every weekday morning.

10   In such an embodiment, printing module 380 does not need to request the document from document server 100, since it can access the documents without going through network 200. In this embodiment, block 2300 of Fig. 2 requests the document from another source – device 300. While block 2900 would still preferably indicate that the document was printed, and while block

15   1700 would still preferably update the user profile in knowledge module 170, printing such a document would preferably not generate any type of credit towards a product subsidy, since such a document would not be considered a "preferred" document, e.g., not a document under the control of edit module 120.

20   Turning next to **Figs. 14** and **15**, an example operation and implementation of an additional feature of printing module 380 is presented, according to one embodiment of the present invention. More specifically, with reference to Fig. 14, a flow chart describing an automated print process implemented by automated print function 404 is presented, according to one

embodiment of the present invention. For ease of explanation and illustration, the method will be developed with further reference to an example user interface (e.g., a web page) depicted in **Fig. 15**.

Turning first to Fig. 15, an example user interface incorporating one

5 aspect of the present invention is presented. According to the illustrated example embodiment, the user interface is a web page for the HP Instant Delivery Service 15000. As depicted, the web page 15000 includes a "What's Hot" section with a featured document or publication, 15002. In addition to a hypertext link to the document 15002, the selection of which would result in

10 redirecting the browser to display the document, web page 15000 includes an automated print icon 15004, which when selected invokes automated print function 404 without redirecting the browser, displaying the document, etc.

According to one implementation, the automated print icon 15004 (e.g., a button) is generated by a provider of the user interface with one or more

15 executable instructions that include a name/identifier and location of the linked document embedded within the instructions. According to the illustrated example Internet embodiment, the automated print icon is generated from one or more hypertext markup language (HTML) instructions, such as those provided in Table 1, below.

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href=/Publication/Publication.asp?HpPubID=221>Dilbert;          (1)
img src=/Data/Dir_0/221/thumbnail.jpg;                          (2)
href=http://services.instant-delivery.com/publication/useraction.asp?
        HpAction=print&HpPubID=221&HpidDetect=1:                (3)
img src=/shared/images/print-now.gif                            (4)
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**Table 1: Example Code Implementing One-Click Print Iconic
Selector**

As introduced above, the instructions implementing iconic selector 15004 include information detailing a name/identifier (HpPubID 221) and location (/Publication) associated with the document(s). The name/identifier and location information is provided to the automated print function 404 from the

5 user interface 15000 via controller 402 when the iconic selector 15004 is selected by a user. In addition to the automated print icon 15004, other innovative iconic selectors may be displayed which, when selected, add the document to one or more print schedule(s) 390 (icon 15008), or cause the document to be displayed (icon 15006).

10 In an alternate embodiment, printing module 380 provides the operating system of device 300 with an "automated print function" that is incorporated into one or more pull-down function menu's provided by the operating system. According to this alternate embodiment, the user merely highlights a document to be printed, and selects the automated print function from an appropriate

15 pull-down menu to automatically print the selected document without displaying the document to the user, or otherwise invoking an application associated with the document.

Fig. 14 illustrates a flow chart detailing the operation of the automated print function 404 of printing module 380. As shown, the method begins with

20 block 14002 when a user is viewing a user interface (e.g., web page 15000) document with links to one or more other documents. In response to receiving an indication to print the identified document, controller 402 of printing module 380 selectively invokes an instance of automated print function 404, block 14004. As alluded to above, automated print function 404 utilizes the

name/identifier and location of the document to generate a download request, block 14006. According to one aspect of the present invention, automated print function 404 formats the request based, at least in part, on the location of the document. That is, automated print function 404 formats the request in

5   accordance with the communication medium used to retrieve the document.

In block 14008, automated print function 404 issues the request to the identified document provider, establishing communication with the provider as necessary. According to one aspect of the invention, alluded to above, if the print request is for a document on a remote provider and the device 300 is not

10   already in communication with the provider, automated print function 404 establishes the necessary communication link via I/O interface 412 and network 200.

In response to the download request, the document is downloaded to one or more memory locations 414A, 414B, etc. in memory 410 of printing

15   module 380, as an instance of document translation/interpretation function 408 is invoked, block 14010. As described above, document translation/interpretation function 408 opens the retrieved document(s) locally within printing module 380, out of purview of the user, enabling the document to be printed.

20   In block 14012, the document is printed without first displaying the document to the user, or requiring any additional information from the user. It should be appreciated, that the one-click print aspect of the present invention enables a user, regardless of skill level, to print a document from any local or remote location. In this regard, the automated print function 404 of print

manager 380 provides users with an innovative, easy means of receiving printed publications.

Referring again to Fig. 7, a print schedule of document 13000 is shown. Document 13000 is referred to as a "personalized document". A "personalized document" is a document that is assembled by edit module 120 of document server 100 from a variety of content providers 50 and advertising providers 80, based on information contained in the user profile stored in knowledge module 170. For example, document 13000 is a "personalized document". Our user has requested that document 13000 – his personalized newspaper – be printed at 6:00 a.m. every day. Edit module 120 examines the user's interests as specified in the user profile stored in knowledge module 170 to assemble the document from selected content providers 50 in which the user has indicated an interest. Edit module 120 also inserts advertising from selected advertising providers 80 – again based on the user profile stored in knowledge module 170.

Fig. 8 shows how the print schedule 390 of Fig. 7 can be edited by the user. The user can use the publisher's recommended schedule, use a default schedule the user has set, or use a custom schedule for delivery. If a custom schedule is selected, the user can select a daily, weekly, or monthly delivery, or select a delivery once every specified number of days, or specify every weekday. In addition, the time of day can also be specified: once at a designated time, multiple times during the day, or multiple times separated by a specified period of time. While not shown here, the user could also edit print

schedule 390 to request that a document be sent upon creation, or upon the occurrence of an external event.

Figs. 9A-9B show document 11000 printed by the printing device according to one embodiment of the invention. Note that this document came
5   from one content provider 50 via network 200 (either through document server 100 or directly), and contains no advertising. While document 11000 is preferably formatted by content provider 50 such that the information contained in the document is optimized to be printed, such formatting is not necessary.

10   Fig. 10 shows document 12000 printed by the printing device according to one embodiment of the invention. Note that this document is a user's daily calendar which came directly from device 300 and not from document server 100 via network 200.

Figs. 11A-D show document 1300 printed by the printing device
15   according to one embodiment of the invention. Note that this document is a user's personalized newspaper which contains information in which the user has indicated a specific interest in, as stored in the user profile in knowledge. module 170. Note also that this document contains advertising that edit module 120 determined the user would also be interested in, again based on the
20   information contained in the user profile stored in knowledge module 170. As has already been discussed, when the user prints a sufficient number of such "preferred" documents, the user may receive a product subsidy of a print consumable or other product(s).

Fig. 12 shows document 14000 printed by the printing device according to one embodiment of the present invention. Note that document 14000 is the HP Instant Delivery Times – a document located on document server 100. While this document does not contain advertising per se, it is still considered to be a "preferred document", since it is under the control of edit module 120. Document 14000 informs users of Instant Delivery of new releases or new information about the Instant Delivery Program.

What is claimed is: